Investigating Translations

Part 1: Translating Segment and Triangle

1. Open the Geometer's Sketchpad sketch **trans.gsp**. Double click on the *Translate k* action button. Describe the movement in your sketch window.

2. Measure the length and slope of the segment before and after the translation. Record your results below.

3. Measure AA′ and BB′. Record your results below.

4. Double click on the Translate Triangle action button. Describe the movement in your sketch window.

5. Measure the sides, interior angles and area of the triangle before and after the translation. Record your results below.

6. Measure the CC′, DD′, and EE′. Record your results below.

7. Make an overall statement summarizing your findings in tasks 1-6.

Part 2: Translating a Polygon by a Marked Vector

1. In a **New Sketch** window, create axes and a grid of at least –10 to 10 along the x-axis. Be sure that the **Snap to Grid** option is selected under the **Graph** menu.

2. Construct a polygon anywhere in your sketch window.

3. Mark a translation vector from the origin to the point (1,0) [point A to point B].

    - Select point A and point B (in order); then under the **Transform** menu, choose **Mark Vector A $\rightarrow$ B**.

4. *Predict* the location of your polygon after it has been translated under the marked vector. Place points in your sketch window and save your prediction.

5. Translate your polygon (both its sides and vertices) by the marked vector.

6. Assess your prediction and describe how your polygon transformed from its pre-image to its image.

7. Drag one of the polygon's vertices. What is the relationship between it and its image?

8. How would the transformation differ if you had selected point B and then point A? Try it!